Espanola District Fisheries Management Plan: 1985-2000

Background Information and Management Options

A Summary

Ontario
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C O R R E C T I O N

An error occurs in Table 4 on page 9 of this document.

Table should read:

	Yield Required to meet Projected Demand (kg)
Trout	27,562.5
Walleye	52,500.0
Other	32,812.5
	112,875.0

Please make the correction upon receiving this document.

Thank you.

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INTRODUCTION

1. Purpose

This document presents a summary of fisheries resource information and management options for public review. Following this review, a Fisheries Management Plan will be developed which will identify both long term (to the year 2000) fisheries management direction and specific short term (5 year) fisheries management programs to be carried out within the Espanola District.

The Fisheries Management Plan considers the 1,772,800 hectares of land and water under the jurisdiction of the Espanola Administrative District of the Ontario Ministry of Natural Resources (M.N.R.). The waters of Lake Huron represent approximately 697,700 hectares of this total.

2. Planning Process

The District Fisheries Management Plan is being prepared within the M.N.R.'s resource planning system. The Espanola District Land Use Guidelines (D.L.U.G.) identifies targets for all M.N.R. programs including fisheries management and outlines generally how management efforts will be directed toward achieving program targets within specific geographic zones. The Fisheries Management Plan will indicate the direction the M.N.R. intends to take regarding fisheries management in the Espanola District, to achieve targets for both the recreational and commercial use of the fisheries resource.

The first stage of the planning process involved the preparation of a Terms of Reference, which provided direction and a timetable for completion of each phase.

The second phase involved the compilation and synthesis of all available data on the district fisheries resource. This allowed the identification of problems and issues, confirmation of fisheries targets and evaluation of management options and strategies. This document summarizes this background information and management options.

Subsequent to public review of this document, a draft Fisheries Management Plan will be prepared. The draft management plan will receive both internal and public review prior to the completion of a final Fisheries Management Plan. The District Manager and Regional Director of the Ministry of Natural Resources must approve the final Fisheries Management Plan.

Preparation of the Fisheries Management Plan is not considered an undertaking under the Environmental Assessment Act. Any management activities which may be carried out in implementation of the Plan will, however, be undertaken in compliance with the Act.

Three management principles believed to be fundamental to the planning process are:

1. lake specific management: roles will be identified for individual lakes, groups of lakes or zones,

2. tourism development: recognizing the importance of fishing to the tourism industry in this region,

3. improved communications and more client involvement: recognizing the importance of involving the users in the management of the resource.

The Lake Huron Management Committee is preparing a management plan which will outline broad objectives and strategies for fisheries management in the waters of Lake Huron. The Espanola District's specific

management strategies for Lake Huron will be developed within the framework of the Espanola District Fisheries Management Plan.

All services of the Ministry of Natural Resources as well as the Ministry of Tourism and Recreation are participating in the preparation of the Fisheries Management Plan to ensure the integration of fisheries management with other resource management programs.

BACKGROUND INFORMATION

1. Perspective

The Espanola District is one of seven administrative districts in the Northeastern Administrative Region of the Ministry of Natural Resources (Figure 1). The Espanola District (Figure 2) is located within a transitional zone that separates Northern and Southern Ontario. Manitoulin Island is similar in climate and landform to the Tobermory-Owen Sound area, while that part of the District north of the Trans-Canada Highway is typical of the Canadian Shield near Chapleau.

The mainland portion of the district, underlain by the Precambrian Shield is characterized by a multitude of lakes, rivers and streams. Many of the larger shield lakes, 50 to 1500 ha in size are deep, cold, nutrient-poor lake trout-lake whitefish waters. The smaller shield lakes have conditions which make them suitable for the stocking of brook trout, rainbow trout and splake to provide artificially maintained fishing opportunities. Numerous warmwater lakes, ranging in size from 10 to 2900 ha, contain fishable populations of walleye (yellow pickerel), northern pike and bass.

The limestone plains of Manitoulin Island are dotted with approximately 200 bodies of water and indented at several locations, predominately on the northern shoreline, by relatively large, discrete bays. Manitoulin Island lakes are generally more nutrient-rich, and therefore more productive than lakes on the North Shore. Lake Manitou contains a coldwater fish community dominated by lake trout. South Bay is currently being stocked with a combination of lake trout and hybrid lake trout backcross. Lakes Mindemoya, Kagawong and Wolsey support typical warmwater fish communities. The smaller island lakes are generally shallow, productive lakes supporting warmwater fisheries for bass, northern pike and yellow perch.

Lake Huron is composed of three natural basins; Georgian Bay, the North Channel and Lake Huron proper. The administrative boundary of the Espanola District encompasses portions of all three basins. Historically, lake trout was the principal predator and lake whitefish, lake herring, several species of chub and sculpins were the main prey species. The inshore areas contain populations of walleye, yellow perch, northern pike, muskellunge, large and smallmouth bass and various panfish.

A variety of stresses have combined to cause changes in the fish community. Declining numbers of lake trout, lake herring, walleye, lake sturgeon and lake whitefish have been noted while large populations of non-native species such as sea lamprey, rainbow smelt, alewives and salmon species are prevalent.

Fish stocking of lake, brook and rainbow trout has been extensive within the District since the 1920's. In general, brook and rainbow trout are stocked to create artificially maintained stocks which provide a put-grow-take fishery while lake trout are stocked

MAP 1

PROVINCIAL AND REGIONAL SETTING OF ESPANOLA DISTRICT

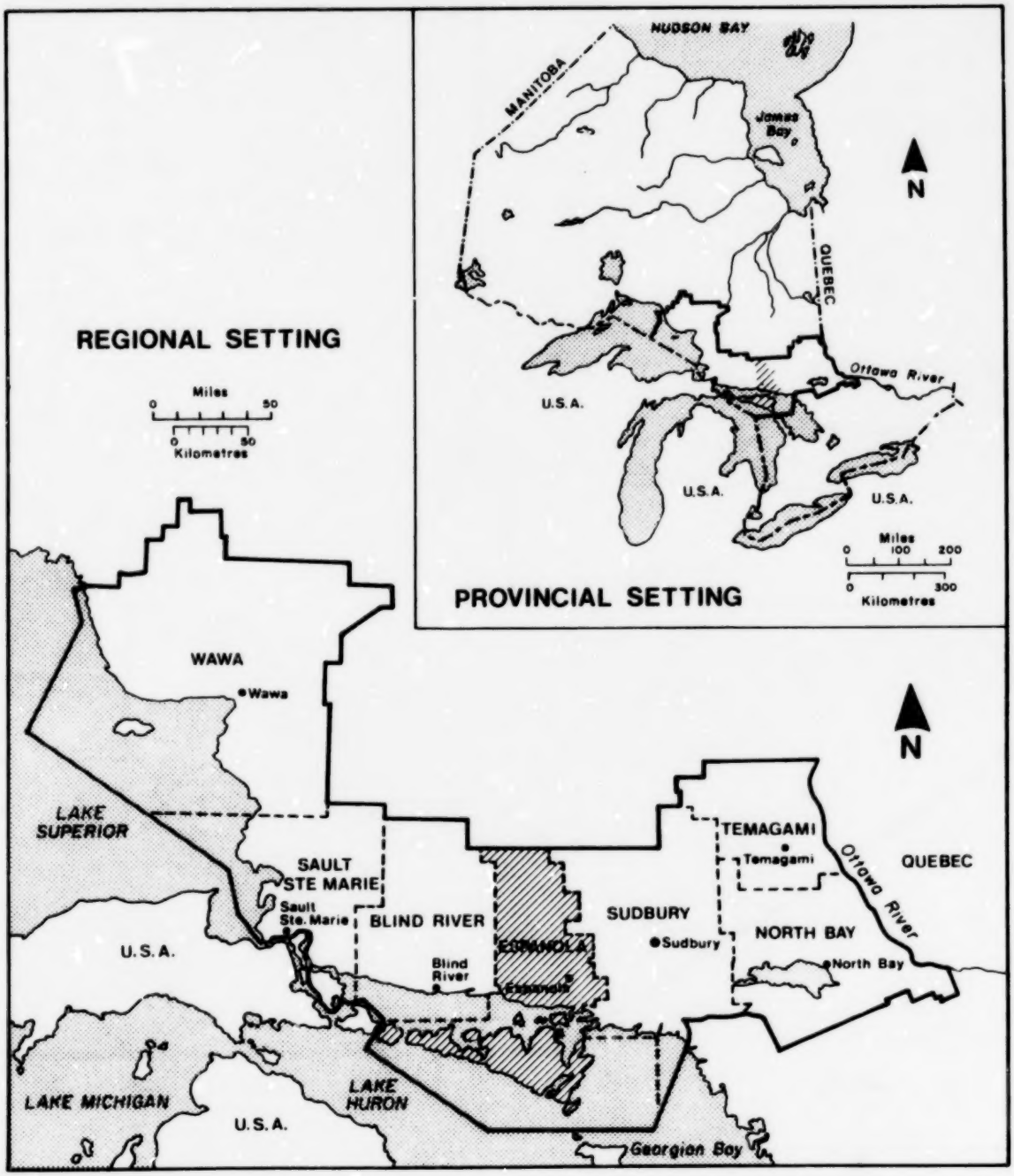
Espanola District

District Administrative Boundary

Northeastern Region Administrative Boundary

Provincial Boundary

International Boundary

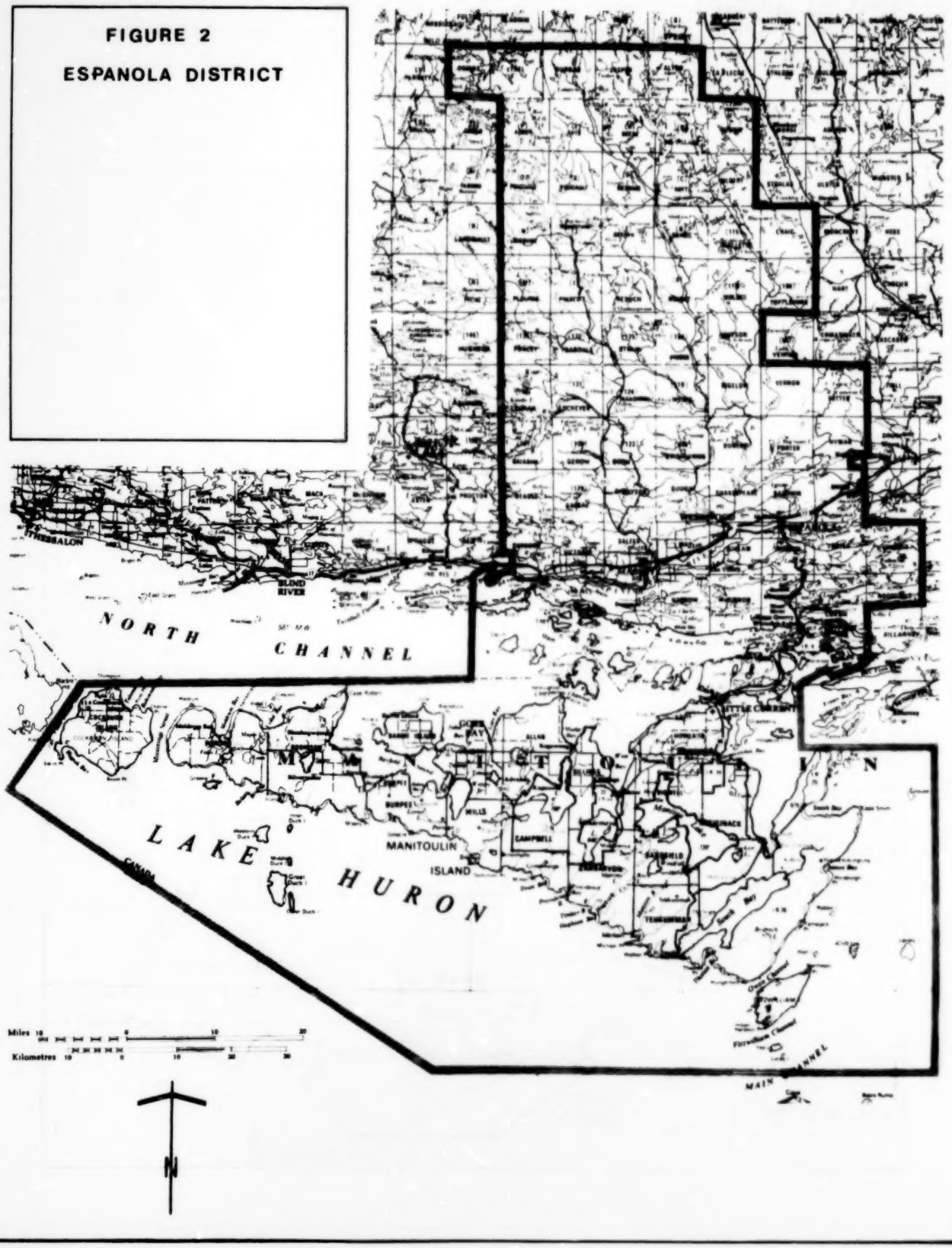


Ministry of Natural Resources
Ontario

ESPANOLA
ADMINISTRATIVE DISTRICT
NORTHEASTERN REGION

FIGURE 2

ESPANOLA DISTRICT



primarily to supplement naturally reproducing stocks to establish self-sustaining populations.

The experimental stocking of lake trout backcross at Heywood Island is directed toward the eventual rehabilitation of Lake Huron with a suitable coldwater species.

Stocking of warm water fish species such as smallmouth and largemouth bass, muskellunge and walleye was more widespread within the District during the 1950's and early 1960's. The declining trend of walleye populations has initiated renewed interest in stocking walleye to rehabilitate former fisheries. The stocking of smallmouth bass in Manitoulin Island lakes is ongoing.

2. The Resource

A summarized inventory of surface water area and potential yield for Espanola District waters is presented in Table 1. Fish species composition was used to catagorize the district waters as either coldwater (trout) or warmwater (walleye, bass, pike). Figure 3 (back cover pocket) is a map of the district's fisheries resource base highlighting the distribution of important sport fish.

A summary of the allowable harvests for major sport fish species in inland waters of the District is presented in Table 2. Allowable harvest represents the potential annual yield of sport fish available to the angler while allowing for the maintenance of a self-sustaining population.

In some cases a lake may not currently be capable of producing to its full potential due to various stresses acting on the fishery. Other lakes may be capable of increased sport fish production if a new species were introduced into a vacant "niche".

Rivers and streams of the Espanola District have been grouped similarily to lakes, by species composition. Waterways which currently provide a sport fishery are included in the Fisheries Management Plan. Potential fish yields for rivers and streams have been estimated to total 8,280.5 kilograms per year. This yield relates to resident fish populations while the potential yield for migratory salmon and rainbow trout will be assigned to Lake Huron.

The production potential of the Lake Huron waters has been broken down by species assemblages for both the sport and commercial fisheries in Table 3.

3. Resource Use

Sportfishing

Angling represents a significant form of outdoor recreation within the Espanola District. Recent district creel surveys have estimated that 213,050 angler opportunities of fishing pressure are expended annually on district lakes. It is estimated that stream and river fisheries provide an additional 10 %, or 21,305 angling opportunities.

Lake Huron, particularly the North Channel waters, also provide unique opportunities for avid anglers. It has been estimated from angler surveys that an additional 37,000 angler-days are exerted annually on Lake Huron waters.

In general, the most sought after sport fish species district-wide are the lake trout and walleye. At certain times of the year however, other fish species become locally significant, such as yellow perch in the bays of the North Channel during the early spring, rainbow smelt runs in local areas, and coarse fish (carp and suckers) in the North Channel. Other angler-preferred

Table 1. Summarized Inventory of Surface Water Area and Potential Yield for Espanola District Waters.

Water			No.	Total Area/Length (ha)/(km)	Total Estimated Potential Yield (kg/yr)
Inland Lakes	Coldwater	North Shore	151	20,521.8	50,150.0
		Manitoulin Is.	1	10,460.7	44,876.4
		South Bay	1	8,600.0	39,333.2
	Warmwater	North Shore	106	13,542.6	38,716.9
		Manitoulin Is.	51	18,413.4	116,765.3
				71,538.5	289,841.8
Rivers Streams	Coldwater	North Shore	20	618.0	5,150.5
		Manitoulin Is.	19	114.4	176.0
	Warmwater	North Shore	2	104.5	2,954.5
				836.9	8,280.5
Lake		North Channel		182,770.6	348,766.0
		Georgian Bay		133,015.7	148,655.0
		Lake Huron Proper		381,911.0	574,425.0
				697,697.3	1,071,846.0

Table 2. Total Estimated Potential Annual Yield of Sport Fish Species from Inland Lakes and Streams in the Espanola District.

Sport Fish Species	No. of Inland Waters with Species Present	Water Area Available to Species (ha)	Total Estimated Allowable Harvest (kg/yr)	Percent of Total
Lake Trout	95	29,306.7	22,307.1	13.8
Brook Trout	98	15,829.4	6,216.4	3.8
Splake	7	317.9	205.8	0.1
Rainbow Trout	1	17.0	34.0	-
Smallmouth Bass	64	40,480.5	30,257.1	18.7
Largemouth Bass	4	112.2	72.8	-
Walleye	25	15,242.9	19,563.3	12.1
Northern Pike	85	43,838.0	40,602.6	25.1
Yellow Perch*	34	28,151.9	20,282.7	12.5
Lake Whitefish	52	31,533.3	22,179.9	13.7
TOTAL			161,721.7	100.0

* Yellow perch was considered only from Manitoulin Island lakes

Note: Although migratory salmon and rainbow trout are present in many inland streams the potential yield of these species has been assigned to Lake Huron (see Table 3).

Table 3. Potential Annual Yields of Sport and Commercial Fish from the Espanola District portion of Lake Huron

Basin	Surface Area (ha)	Species	Sport Fishery Production Area (ha)	Sport Fishery Potential Yield (kg)	Commercial Fishery Potential Yield * (kg)
North Channel	182,770	Walleye	6,730	8,076	3,808
		Northern Pike	51,550	61,860	11,309
		Bass (+ Panfish)	50,370	50,370	-
		Yellow Perch	50,590	25,295	29,352
		Muskellunge	8,580	1,716	-
		Lake Whitefish	-	-	58,115
		Chub	-	-	455
		Sturgeon	-	-	4,739
		Trout/Salmon**	182,770	91,385	1,377
		Sub-total		238,702	110,064
Georgian Bay	133,015	Northern Pike	1,530	1,836	1,135
		Bass (+ Panfish)	1,530	1,530	-
		Yellow Perch	1,530	765	6,810
		Lake Whitefish	-	-	35,668
		Chub	-	-	33,858
		Trout/Salmon**	133,015	66,508	545
		Sub-total		70,639	78,016
Lake Huron	381,911	Walleye	-	-	319
		Northern Pike	1,480	1,776	551
		Bass (+ Panfish)	610	610	-
		Yellow Perch	1,000	500	1,861
		Lake Whitefish	-	-	293,310
		Chub	-	-	80,403
		Catfish	-	-	556
		Sturgeon	-	-	502
		Trout/Salmon**	381,911	190,596	3,441
		Sub-total		193,482	380,943
Total	697,696	Coolwater Species		154,334	563,660
		Trout/Salmon**		348,489	5,363

* Commercial Fishery Potential Yields represent present quotas

** Potential theoretical yield of trout and salmon from a rehabilitated Lake Huron

species include bass (smallmouth and largemouth), brook trout, northern pike, and salmon.

Sport fishing forms the basis of the tourist industry in the Espanola District. District creel surveys indicate that as much as 90 % of the angling pressure on Manitoulin Island lakes originates from commercial guests of tourist outfitters. Approximately 60 % of angling pressure exerted on larger lakes of the North Shore area has been found to be attributed to the tourist industry. The majority of these commercial guests are non-residents.

Commercial Fish

There is a long history of commercial fishing in the Lake Huron waters of the Espanola District. Records date back to the 1870's, and local history reflects the past importance of commercial fishing to the area.

Province-wide, the commercial fishing industry has undergone a modernization program.

Currently, commercial harvest is regulated by quota management. Quotas in kilograms of fish, are designated on a zone basis and then allocated among all the commercial fishermen operating within the zone. The quotas were, in part, based on the past harvest records of the commercial fishermen.

In 1985, the Lake Huron fishery resource of the Espanola District supported 27 commercial licences: 20 gillnets, 2 gillnet-trapnet combinations and 5 trap or pound net combinations. The total quota allocation (all species) for commercial fishermen licensed in the Espanola District is 569,023 kg per year. In 1985, a quota of 44,306 kg was established for pink salmon in the North Channel and Lake Huron zones due to the increasing stocks of this species.

As indicated by the catch records, the most commonly caught fish has been the lake whitefish. In the past, this species has averaged in excess of 70% of the total catch. Chub harvests make up a significant proportion of the catch from both the Lake Huron zones and to a lesser extent the Georgian Bay zones. The most recent information (1983) on the value of the catch to the fishermen estimates a dollar value of $ 546,672.00.

Bait Fishing

During 1984, there were 36 bait fishing licenses issued in the Espanola District. The current block system in effect on the mainland is based on a township basis. In 1984, 19 blocks or townships were licensed. On Manitoulin Island, dealers are issued more area-specific licenses.

Annual returns indicate a general increasing trend of harvest over the last ten years with a total catch of between 13,000 and 28,000 dozen.

4. Projected Resource Use - Year 2000

Sportfishing

Demand for angler opportunities is expected to increase by 12 % to the year 2000, in proportion to population increases. This equates to a projected demand for 262,500 angler-days (one angler-day equals 4 hours of fishing). Present angler preferences and quality standards were used to project the anticipated future demand of coldwater and warmwater species (Table 4).

The anticipated demand for trout species from inland lakes can be met within the present capabilities of the resource, provided all existing inland coldwater fisheries are

Table 4. Projected Demand for Sport Fish in Inland Waters and Present Supply

Species	Demand - Year 2000			Supply	
	Projected Angler Days	Quality Standard (kg/ang. day)	Yield Required to meet Projected Demand (kg)	Present Resource Capability (kg)	Difference *** (Supply vs Demand)
Trout *	91,875 (35%)	0.3	25,058.3	28,763.3	+ 1,200.8
Walleye	105,000 (40%)	0.5	47,730.0	19,563.3	- 32,936.7
Other **	65,625 (25%)	0.5	29,831.3	113,395.1	+ 80,582.6
TOTAL	262,500		112,875.0	161,721.7	

* Trout species include lake trout, brook trout, rainbow trout and splake

** Other warmwater species include bass, northern pike and yellow perch

*** A positive balance indicates the anticipated demand can be met or exceeded by the present supply.

A negative balance indicates the anticipated demand can not be met within the present capabilities of the resource.

managed to meet their maximum potential production.

The present supply of walleye from District inland lakes is inadequate to meet anticipated demand for this species. Projected demand for other species (bass, pike, perch, whitefish) is well below the present potential supply of these species.

The future demand for angling opportunities from Lake Huron is unknown, however, it is likely that the demand for angling will increase as rehabilitation of the Lake Huron fishery continues.

Commercial Fishing

At the time when targets were being developed for the Land Use Guidelines, a total harvest of 510,000 kg of all species was projected for the commercial fishing industry. Quotas have now been established for specific species and zones based on the best available information and technology. The development of species quotas for the commercial fishing industry has resulted in a present allocation of 610,000 kg of fish. Future levels of commercial harvest will reflect both available fish stocks, species composition and market demands.

Bait Fishing

It is expected that as the demand for sport fishing opportunities increases, so will the demand for bait fish. Although there is no present means of calculating potential production of bait fish, it is felt that the bait fish resource in the Espanola District has the potential to support an increased industry.

FISHERIES MANAGEMENT OBJECTIVES AND TARGETS

The fisheries management objective of the Ministry of Natural Resources is:

- To protect, enhance, maintain and rehabilitate fish communities and their environment in order to provide an optimum contribution of fish, fishing opportunities and associated benefits to society.

This management objective is supported by specific sport fish, lake trout and commercial fishing objectives and targets in the District Land Use Guidelines.

Table 5 provides a summary of current and projected (year 2000) resource use and demand estimates. Fisheries management targets from the Espanola District Land Use Guidelines have been refined, based on the estimated potential of the resource base and its capability to meet future user demands.

The D.L.U.G. target for sport fishing has been refined and specific targets developed by species assemblages. These targets reflect the potential capabilities of the fishery resource to meet a future demand of 262,500 angler-days.

The target for sport fish from Lake Huron is based on the potential yields from a rehabilitated fishery.

Commercial fishing quotas are designed to stabilize harvests according to resource capabilities. Presently, the best estimate of resource capability is reflected by the present harvest quotas. Estimates of resource capability may, however, be refined as fish communities change, or as better yield estimates are developed.

The bait fish target of 30,000 dozen, reflects an anticipated increase in demand for bait fish, corresponding to an increased angling fishery.

Table 5. Testing and Refinement of Fisheries Targets for the Espanola District

	Current Use[1]		D.L.U.G. Target		Projected Demand[3]		Projected Resource Capability		Refined Target	
	angler-days[2]	harvest (kg)	ang.-days	harvest (kg)	ang.-days	harvest (kg)	ang.-days	harvest (kg)	ang.-days	harvest (kg)
A. SPORT FISHERY										
Inland Waters										
Trout		-	-		91,875	27,562.5	-	28,763.3	95,825	28,750
Walleye		-	-		105,000	52,500.0	-	25,000.0[4]	50,000	25,000
Other		-	-		65,625	32,812.5	-	113,395.1	116,675	50,660
TOTAL	234,355	-	-	155,000	262,500	112,875.0	-	167,158.4	262,500	100,660
Lake Huron										
Trout/Salmon		-	-	-	-	-	-	348,489[5]	-	348,500
Walleye		-	-	-	-	-	-	8,076	-	8,075
Other		-	-	-	-	-	-	146,258	-	146,250
TOTAL	37,000	-	-	-	-	-	-	502,823	-	502,825
B. COMMERCIAL FISHERY (Food)	27 lic.	569,023[6]		510,000		-		-		569,023
C. COMMERCIAL FISHERY (Bait)	36 lic.	28,000 doz.		24,000 doz.		30,000 doz.				30,000 doz.

1. Based on district creel surveys
2. One angler-day equals 4 hours of fishing
3. From Table 3
4. Assumes increase in present walleye production resulting from stocking programs (C.F.I.P.)
5. Potential production from a rehabilitated Lake Huron
6. 1985 quota allocation

PROBLEMS AND ISSUES

A number of problems and issues have been identified which may constrain the effective management of the fishery resource in the Espanola District. Influencing factors may be directly affecting the fish resource or they may be acting on the aquatic environment indirectly affecting fish metabolism. Some issues are more subtle or are based on the perceptions of either the public or fisheries managers.

1. Meeting User Demands within the Capability of the Resource

Angler surveys indicate that lake trout and walleye are the species most preferred by anglers, representing 75 % of angler demand. Anticipated demand for trout can be met within the present capabilities of the resource, provided present stocking levels are maintained.

The present supply of walleye from District inland lakes is inadequate to meet angler demand (either current or future) for this species. A portion of this demand may be met through rehabilitation of former fisheries or by introductions of walleye into new lakes. It is unlikely, however, that the supply of walleye can be expanded to fully meet the demand.

Other species, such as northern pike and bass are abundant, and supply far exceeds present angler demand. A number of fish species, such as suckers, carp and burbot, are considered undesirable and are not fully utilized by either the sport or commercial fisheries

2. Over-fishing

Over-fishing occurs when harvest exceeds the maintenance capabilities of the fisheries resource. The result is depletion or eventual loss of fish stocks with the corresponding deterioration of angling opportunities.

Presently, fishing effort in the District is concentrated on certain species (lake trout and walleye). Over-fishing of these top-level predators may lead to a species imbalance, with the proliferation of non-target species (herring, perch and suckers).

The angler harvest of lake trout is suspected to be approaching the allowable harvest in several lakes but documented evidence is sparse. Over-fishing may result in a reduction of native lake trout stocks and increased reliance upon stocked fish. Lake trout lakes tend to be clustered in groups, scattered throughout the District and for the most part have well developed access. Increased accessibility by snowmobiles and all terrain vehicles has lead to year-round angling pressure.

Over-fishing may also impair or delay the rehabilitation of a fishery. This may be the case with the lake trout rehabilitation program in Iroquois Bay.

In association with over-fishing is the problem of illegal harvest of fish. This problem manifests itself through over-limits, fishing out of season or in a sanctuary, fishing with restricted gear such as set lines or using too many lines. In many instances illegal activities are concentrated during fish spawning periods and the loss of brood stock may have deleterious long term effects on the fishery.

3. Loss of Fish Species or Genetic Stocks

The loss of a fish species or an individual stock (a discrete sub-population) is often ir-reversible. The loss of a top-level predator (such as the loss of lake trout from Lake Huron) can

have a destabilizing effect on the aquatic community.

Iroquois Bay supports a remnant stock of original Lake Huron lake trout. The M.N.R. is attempting to maintain this genetic stock but efforts to replace or rehabilitate a lost or depleted fish stock are often difficult if not impossible.

Lake trout are a unique and fragile species, and special management is often required to ensure its continued existence in inland lakes.

4. Inadequate Sources of Hatchery Reared Fish

The effective rehabilitation of degraded fish populations often requires large numbers of fish for stocking. As well, many of our inland trout fisheries are reliant on stocking programs.

The demand for hatchery reared fish presently exceeds the current capacity of the provincial hatchery system. Advancements in alternative technologies, such as cage culture are for the most part still in the experimental stages.

Other species, such as walleye, muskellunge and salmon are not generally available through the provincial hatchery system. The rearing of walleye in jar hatcheries through the Community Fisheries Involvement Program, may be limited by inadequate sources of eggs to meet all demands.

5. Introduction of Non-native Species

Introductions, whether accidental or intentional, often have very profound effects on resident aquatic communities.

The invasion and establishment of non-native species, such as rainbow smelt, alewife, sea lamprey and Pacific salmon, in Lake Huron has limited the native fish species through predation, competition (for space and food), parasitism, disease and loss of desired gene pools. The lack of life history information related to some introduced species, such as Pacific salmon, has complicated the situation.

Sea lamprey have been acknowledged as a contributing factor in the decline of lake trout in Lake Huron. The Sea Lamprey Control program has significantly reduced the population in some areas of Lake Huron, however, there are limitations to its effective control in the western part of the North Channel.

Unwanted species such as rainbow smelt and yellow perch have been introduced into some inland lakes, particularly stocked waters through careless release of baitfish. The invasion of smelt into district waters may be limiting successful recruitment of lake whitefish and possibly lake trout. Both perch and smelt limit trout production in lakes by predation of eggs on the shoals or through competition for space and prey with the young trout.

6. Habitat Loss and/or Degradation

Problems arise as a result of either physical habitat loss (streams, spawning beds, nursery areas, etc.) or the impairment of environmental quality (acidification, deterioration of oxygen levels). These factors reduce the area available to the fish stocks.

Acid precipitation (acid rain) is a limiting factor to fisheries in parts of the Espanola District. The Ministry of the Environment surveyed 94 lakes in the district for acid sensitivity. Of these, 8 were classified as acidified, and 20 were determined to be extremely sensitive to acidification. Acidification of a lake may result in increased egg or fry mortality and increased physiological stress on fish. The

granitic nature of bedrock, combined with shallow soils provides limited buffering capacity to acid rain in North Shore lakes. The effects of acid rain are believed to be responsible for or to have contributed to the loss of former fisheries in some district waters.

Shoreline development by both the public and private sectors has a potentially harmful impact on the environmental quality of the District's waters. Excessive shoreline development contributes to the loss of habitat quality through removal of aquatic vegetation, alterations of shoreline habitat (dock, pier or beach construction) and ineffective septic systems which contribute to increased nutrient levels. Agricultural practices influence water quality by increasing runoff, sedimentation and nutrient loading (leaching fertilizers), and reducing the suitability of stream habitat to coldwater species.

Industrial pollution does present some resource management contraints within the Espanola District. Historically, effluent from the pulp and paper mill located in the Town of Espanola has seriously limited the fisheries resources and management options for the lower Spanish River.

Surface water contamination from the uranium mines at Elliot Lake have significantly affected the water quality of the Serpent River system. The possibility of some water contamination from abandoned mine mill tailing dumps exists in selected areas of the district. In addition to the deterioration of water quality and habitat, industrial pollution may introduce contaminants into the food chain which render fish flesh inedible.

Water level fluctuations resulting from the operation of dams can limit fish production through the exposure of unhatched eggs, insufficient wave-action cleaning of spawning shoals and the instability of littoral zone habitat. The timing of water level drawdowns is critical from a fisheries management aspect.

Forest harvesting practices have the potential to seriously impact the fisheries resource through alterations of shoreline habitat and increased runoff and siltation. Better documentation of spawning, nursery and essential living areas of fish is necessary for input into timber harvesting plans, and other plan review (private and municipal).

7. User Conflicts

Conflicts among users of the environment and the fisheries resource may be direct or indirect and arise from differences in traditional use and a wide variety of expectations from different user groups.

Conflicts have arisen between the commercial fishery and sports fishermen who perceive they are competing for the same resource.

Increased forest harvesting operations may conflict with fisheries management objectives on some lakes. Location of new forest access roads may provide increased access to previously "remote" lakes. This can lead to excessive angling pressure or may cause conflicts with tourist outfitters who offer "remote" fishing opportunities.

Water level management practices occasionally result in conflicts between lakefront property owners and fisheries management objectives.

There is an increasing trend of private land being posted as non-fishing areas particularly on rainbow trout and salmon streams on Manitoulin Island. Disregard for the owners wishes, destruction of property and littering all lead to

loss of public access to fishing areas.

Numerous land use activities such as municipal development, drainage, agricultural land use, resource extraction, and dredging can have complex and adverse impacts on resident fisheries. In many of these cases the issue is short term economic concerns versus the maintenance of the fisheries resource and associated benefits.

8 Lack of Public Awareness

Increased public awareness of the fundamental concepts of fisheries resource management is required. Much of the general public is not familiar with concepts such as carrying capacity, species interactions and the inadequacy of artificial fish stocking versus self-sustaining populations. Past misconceptions have resulted in unrealistic expections about resource capability and angling success.

9. Inadequate Scientific Knowledge

The effective management of the fisheries resource is sometimes hampered by a lack of scientific and technical knowledge.

Better scientific knowledge is required on many complex issues such as productivity and long-term yields from waterbodies, species interactions and long term implications of various changes to the aquatic ecosystem.

OPTIONAL MANAGEMENT STRATEGIES AND TACTICS

1. INTRODUCTION

Optional management strategies, directed toward resolving the identified problems and issues in order to achieve the objectives and targets for sport and commercial fisheries are presented here. Optional management tactics formulated to achieve each strategy are listed. Strategies are planned actions to achieve a desired end, while tactics are the specific management projects that could be carried out to implement the strategy. Only those tactics that are technically, economically and socially acceptable are considered.

Strategies and tactics are not necessarily limited to those listed here. The identification of new and innovative ways to accomplish strategies is an ongoing process, and when better tactics are identified they will be utilized. Once preferred strategies and tactics are selected, they will be priorized in the draft Fisheries Management Plan.

PROBLEM/ISSUE - MEETING USER DEMANDS WITHIN THE CAPABILITY OF THE RESOURCE

OPTIONAL MANAGEMENT STRATEGIES	TACTICS
(1) REHABILITATE FORMER WALLEYE FISHERIES TO PROVIDE INCREASED ANGLING OPPORTUNITIES	(a) Encourage and support Community Fisheries Involvement Programs to raise and stock walleye in lakes which formerly supported this species (b) Assess available spawning habitat in these lakes and, if necessary, encourage spawning bed rehabilitation as part of these C.F.I.P. programs (c) Carry out rehabilitation work (stocking and habitat work) through regular M.N.R. programs (d) Assess success of rehabilitation efforts through creel surveys and assessment netting of stocked lakes (e) Expand stocking programs to other suitable lakes if program is successful
(2) MANAGE THE SPANISH RIVER (BELOW ESPANOLA) TO PROVIDE A HIGH QUALITY RIVER FISHERY FOR WALLEYE	(a) Work with M.O.E. to ensure continued improvement of water quality in the Spanish River (b) Continue to stock 1 million fry annually as part of a 3-year program ending in 1986
(3) EXPAND THE PRESENT RANGE OF WALLEYE IN THE DISTRICT	(a) Introduce walleye into suitable district waters by: i) adult transfers of suitable stock ii) rearing and stocking of fry/fingerlings through M.N.R. programs, or through C.F.I.P. projects
(4) CONTINUE TO PROVIDE ANGLING OPPORTUNITIES FOR COLDWATER (TROUT) SPECIES AND PROVIDE ADDITIONAL OPPORTUNITIES WHERE POSSIBLE	(a) Stock to maintain and improve to self-sustaining those district lake trout lakes which are producing below their biological potential (b) Continue to provide fisheries for brook trout, rainbow trout and splake by stocking appropriate inland lakes on a put-grow-take basis

PROBLEM/ISSUE - MEETING USER DEMANDS WITHIN THE CAPABILITY OF THE RESOURCE

OPTIONAL MANAGEMENT STRATEGIES	TACTICS
	(c) Continue to stock catchable-size trout at Chutes Provincial Park (Aux Sable River) and Bridal Veil Falls (Kagawong River) on a put-and-take basis to provide immediate returns to anglers
	(d) Conduct aquatic habitat inventory surveys, or update old surveys, to identify additional lakes with potential to support coldwater fisheries
	(e) Reclaim coldwater lakes which have been invaded by coarse fish, prior to stocking with brook trout
	(f) Establish a lake trout backcross and/or lake trout fishery in South Bay
	(g) Rehabilitate the Lake Huron fishery to provide increased angling opportunities
	(h) Maintain present level of access to all inland lake trout lakes
	(i) Secure public access to coldwater streams on Manitoulin Island
(5) DISPERSE ANGLING PRESSURE TO LESS UTILIZED LAKES AND/OR ALTERNATE SPECIES	(a) Allow increased access to district lakes which could support additional angling pressure
	(b) Continue to provide or expand opportunites for "alternate" means of fishing, eg., bow and arrow season for coarse fish; smelt fishing with dip-net or seine; spear fishing for coarse fish
	(c) Promote fishing of under-utilized species
(6) PROMOTE NON-CONSUMPTIVE USES OF THE DISTRICT'S FISHERIES RESOURCE	(a) Promote tours of Sandfield Hatchery
	(b) Establish viewing areas where the public can view spawning runs of salmon; establish sanctuaries, encourage C.F.I.P. groups to build boardwalks
	(c) Encourage catch-and-release fishing (eg. Spanish River) through public education or incentive programs
(7) MANAGE THE COMMERCIAL FISHERY ON A SUSTAINED YIELD BASIS	(a) Continue to set individual quotas by species to regulate harvest and adjust quotas to reflect expanding or declining stocks and strong or weak year-classes.

PROBLEM/ISSUES - MEETING USER DEMANDS WITHIN THE CAPABILITY OF THE RESOURCE

OPTIONAL MANAGEMENT STRATEGIES	TACTICS
	(b) Work with the Lake Huron Fisheries Assessment Unit to obtain better biological data and population estimates on fish stocks and sustained yields as a basis for quota management
	(c) Enforce commercial fishing related acts and regulations to ensure accurate reporting, and ensure quotas are not exceeded
	(d) Encourage aquaculture of food-fish species to supply market demand
(8) ENCOURAGE THE COMMERCIAL HARVEST OF UNDERUTILIZED SPECIES	(a) Promote the private sector development of new markets for underutilized species
	(b) Allow commercial harvest of pink salmon where this species is not fully utilized by the sports fishery
(9) MANAGE THE DISTRICT BAITFISH RESOURCE TO ENSURE SOCIO-ECONOMIC BENEFITS AND THE MAINTENANCE OF STABLE FISH COMMUNITIES	(a) Continue to licence baitfish areas on the "North Shore" using an exclusive-use block system. On Manitoulin Island, licence specific areas (streams, lakes or parts of) to individual bait fishermen
	(b) Monitor harvest levels; encourage accurate harvest records
	(c) Inspect baitfish dealers facilities on a regular basis
(10) INCREASE BAITFISH PRODUCTION TO MEET FUTURE DEMAND	(a) Licence new areas for baitfish harvest
	(b) Allow introductions of baitfish species into waters not capable of supporting sport fish species
	(c) Encourage private aquaculture of baitfish species (eg. suckers)
	(d) Develop an extension program to improve baitfish harvesters' trapping and handling techniques

PROBLEM/ISSUE - OVER-FISHING

OPTIONAL MANAGEMENT STRATEGIES	TACTICS
(1) MONITOR HARVEST OF SPORT FISH BY ANGLERS AND IDENTIFY WHERE HARVESTS EXCEED BIOLOGICAL CAPABILITY OF THE RESOURCE	(a) Monitor harvest levels through periodic creel surveys on district waters, priority being those lakes known (or suspected) to have highest angling pressure (eg., Lake Manitou, Iroquois Bay) or where data is needed to monitor specific management programs (Lang Lake, McGregor Bay) (b) Initiate voluntary creel programs on specific lakes by working with tourist outfitters and cottagers associations (c) Conduct aerial creel surveys on a standard (index) set of district lakes every 5 years to monitor changes in fishing pressure across the district
(2) WHERE ANGLER HARVEST OF SPORT FISH IS FOUND TO APPROACH OR EXCEED THE SUSTAINABLE YIELD OF A LAKE, OR THREATENS TO JEOPARDIZE REHABILITATION OF A POPULATION, IMPLEMENT AREA SPECIFIC REGULATIONS TO MAINTAIN HARVEST AT AN ACCEPTABLE LEVEL	(a) Shorten/adjust angling seasons (b) Reduce daily catch limits (c) Impose minimum size or "slot" size limits (d) Implement gear restrictions (e) Designate selected areas as fish sanctuaries (f) Direct fishing pressure to alternate areas or fish species (g) Encourage catch-and-release fishing (h) Prevent future over-harvests of inland lake trout populations by controlling or restricting new access to certain lakes as required.
(3) CONTROL ILLEGAL FISHING (OVERLIMITS, ILLEGALLY CAUGHT FISH)	(a) Continue to enforce all regulations (b) Educate public and encourage them to report poachers.

PROBLEM/ISSUE - LOSS OF FISH SPECIES OR GENETIC STOCKS

OPTIONAL MANAGEMENT STRATEGIES	TACTICS
(1) PROTECT AND REHABILITATE THE NATIVE LAKE TROUT POPULATION OF IROQUOIS BAY	(a) Continue to collect spawn from Iroquois Bay native stock and re-stock these fish to preserve and rehabilitate this important gene pool (b) Monitor angler harvest levels and control harvest as necessary through appropriate regulations (shortened or closed seasons, sanctuaries) to ensure angler harvests do not jeopardize rehabilitation efforts (c) Determine factors limiting natural recruitment and work to eliminate or reduce these stresses (d) Investigate feasibility of stocking Iroquois Bay fish in a barren inland lake to further protect this stock (e) Investigate the feasibility of establishing a hatchery brood stock of Iroquois Bay fish to ensure a future supply of eggs
(2) MAINTAIN OR IMPROVE ALL DESIGNATED INLAND LAKE TROUT FISHERIES	(a) Protect lake trout lakes, as required, from additional access or development as per District Land Use Guidelines, through plan input and review of development or resource extraction plans (b) Review plans for any future development on lake trout lakes and encourage only that development which is designed to have a minimal impact on fish habitat (c) Stock hatchery-reared fish as necessary to maintain and improve to self-sustaining those lake trout lakes which are producing below their biological potential (d) Assess contribution of hatchery reared fish to the population through netting, creel surveys (e) Assess and review classification of district lake trout lakes at 5 year review period, and re-classify lakes as necessary

PROBLEM/ISSUE - LOSS OF FISH SPECIES OR GENETIC STOCKS

OPTIONAL MANAGEMENT STRATEGIES	TACTICS
(3) REHABILITATE THE LAKE HURON FISHERY TO PROVIDE INCREASED BENEFITS TO BOTH COMMERCIAL AND SPORTS FISHERIES	(a) Work with other districts and the Lake Huron Management Committee to develop and implement long term management programs to restore a balanced species community (b) Continue to stock lake trout backcross and/or lake trout at Heywood Island to establish a self-sustaining population and provide angling opportunities (c) Continue to stock lake trout backcross and/or lake trout in the North Channel, east of Clapperton Island, to establish a self-sustaining sport fishery (d) Allow salmon stocking by C.F.I.P. groups in locations which will not seriously impact on native species, or jeopardize rehabilitation efforts (e) Ensure that a healthy spawning and nursery environment for salmon is maintained in Manitoulin Island streams (Blue Jay Creek, Manitou River, Mindemoya River, Kagawong River) (f) Establish fall sanctuaries in key locations to protect spawning salmon
(4) PREVENT THE EXTINCTION OF ANY RESIDENT FISH SPECIES OR GENETIC STOCK	(a) Identify threatened species or genetic stocks (b) Actively enforce existing legislation to prevent over-fishing or habitat degradation (c) Maintain gene pool integrity of local fish populations by stocking native strains of fish

PROBLEM/ISSUE - INADEQUATE SOURCES OF HATCHERY-REARED FISH

OPTIONAL MANAGEMENT STRATEGIES	TACTICS
(1) ENSURE LAKE MANITOU CONTINUES TO PROVIDE BOTH AN IMPORTANT ANGLING FISHERY FOR LAKE TROUT, AND A SOURCE OF LAKE TROUT SPAWN FOR THE PROVINICAL FISH CULTURE PROGRAM	(a) Continue to monitor the angling harvest of lake trout to ensure harvest levels remain within the biological potential of the lake (b) Critically review any future shoreline development which may jeopardize the water quality of Lake Manitou (c) Protect critical fish habitat (spawning shoals, littoral zone habitat) through review of all internal (M.N.R.) and external (public and private sector) work plans, and through application of appropriate legislation such as the Lakes and Rivers Improvement Act and the Fisheries Act
(2) OPTIMIZE THE USE OF HATCHERY REARED FISH	(a) Stock hatchery reared fish only where they will give the best returns to anglers, and/or meet specific management goals (eg. rehabilitation) (b) Determine public's preference as to mix of species and lakes to be stocked.
(3) EXPAND THE PROVINCIAL FISH CULTURE PROGRAM	(a) Construct new fish culture stations (b) Enlarge existing fish culture facilities
(4) PROMOTE FISH CULTURE PROJECTS BY THE PUBLIC	(a) Provide monetary incentives, advice and expertise to public interest groups to culture fish, through C.F.I.P. (b) Promote private sector aqua-culture operations (c) Purchase fish from private hatcheries for put-and-take stocking
(5) DEVELOP NEW/ALTERNATE METHODS OF FISH CULTURE	(a) Continue to develop technology for the cage-culture and pond-rearing of trout and salmon species (b) Encourage construction and use of mini hatcheries and/or streamside incubation boxes by public interest groups

PROBLEM/ISSUE - INTRODUCTION OF NON-NATIVE SPECIES

OPTIONAL MANAGEMENT STRATEGIES	TACTICS
(1) PREVENT INTRODUCTIONS OF UNDESIRABLE SPECIES	(a) Prevent culture and release of undesirable species by private aquaculture industry (b) Regulate the transfer of fish (c) Ensure fish health standards are met (d) Restrict use of live bait in newly-stocked waters as required (e) Educate public regarding potential impacts of unauthorized introductions
(2) STUDY POTENTIAL IMPACTS OF SPECIES INTRODUCTIONS	(a) Encourage research into the effects of introduced species, such as smelt, perch and salmon, on native fish populations (b) Monitor impacts of introductions on resident populations
(3) RECOGNIZE AND SUPPORT SEA LAMPREY CONTROL OBJECTIVES	(a) Collect and record information regarding wounding and scarring rates (b) Support and encourage lampricide treatments where needed

PROBLEM/ISSUE - HABITAT LOSS AND/OR DEGRADATION

OPTIONAL MANAGEMENT STRATEGIES	TACTICS
(1) INVENTORY AND ASSESS FISHERIES HABITAT	(a) Identify and assess key fish habitat components on major lakes, rivers and streams, priority being those lake trout and walleye lakes and those coldwater streams where shoreline development or resource extraction are likely (b) Update old lake surveys or survey new waters as necessary (c) Continue to work with M.O.E. to assess water quality in relation to fisheries
(2) PROTECT BOTH PHYSICAL HABITAT AND WATER QUALITY OF DISTRICT LAKES	(a) Protect spawning sites and other key habitat areas (feeding and nursery areas, migratory routes) from physical disturbance or loss of water quality, through appropriate plan input and review (b) Regulate or prohibit shoreline development which will lead to a reduction in water quality or a loss of physical habitat (c) Enforce existing legislation to prevent habitat degradation (d) Work with landowners, municipalities and Ministry of Agriculture and Food to minimize impacts of agricultural practices on cold water stream habitat (drainage ditches, cattle access, removing streamside vegetation) (e) Modify or restrict timber harvesting and other resource extraction practices in shoreline areas as necessary (f) Work with water level control agencies to minimize the negative impact of water level fluctuation (g) Educate the general public regarding the importance of fish habitat
(3) REHABILITATE DEGRADED FISH HABITAT	(a) Rehabilitate degraded spawning habitat, or create new spawning areas as necessary (eg. prior to introducing walleye) (b) Encourage C.F.I.P. groups to work with farmers in such projects as fencing cattle from streams, revegetating stream banks, etc.

PROBLEM/ISSUE - HABITAT LOSS AND/OR DEGRADATION

OPTIONAL MANAGEMENT STRATEGIES	TACTICS
(4) ASSESS THE RATE AND EFFECTS OF ACIDIFICATION ON DISTRICT FISHERIES	(a) Continue to cooperate with M.O.E. in monitoring the pH and alkalinity of district lakes (b) Continue to assess the rate and effects of acid precipitation on district fisheries (c) Utilize new knowledge, as available, to enhance and protect the buffering capacity of acid sensitive waters

PROBLEM/ISSUE - USER CONFLICTS

OPTIONAL MANAGEMENT STRATEGIES	TACTICS
(1) REDUCE CONFLICTS BETWEEN THE SPORT FISHERY AND COMMERCIAL FISHERY	(a) Encourage commercial fishermen to voluntarily limit their fishing operations in areas popular for sports fishing (b) Restrict commercial fishing in areas where conflicts arise (c) Increase public understanding of the commercial fishing industry through public education programs (d) Allow only impounding gear in areas where high incidental catches of non-target species (lake trout backcross, salmon) are likely (e) Encourage the harvesting of coarse fish
(2) ENSURE THE NEEDS OF THE DISTRICT'S NATIVE FISHERY ARE MET WITHIN THE BIOLOGICAL CAPABILITIES OF DISTRICT WATERS	(a) Licence all commercial fishing by native persons through individual licences and manage as other commercial fisheries in the District (b) Assist, as requested, in the management of fisheries on Indian Reserves, by way of consultation or lake surveys (c) Allow the use of nets by Indian Bands for the taking of fish for Band use, by issuing licences or permits for non-sports fish in specific waters and at specified times (d) Encourage Indian Bands to take fish for food by hook and line, in accord with the Ontario Fishery Regulations.
(3) ENSURE THAT "DESIGNATED TOURISM LAKES" (D.T.L.) AS IDENTIFIED IN THE DISTRICT LAND USE GUIDELINES ARE MAINTAINED AS REMOTE FISHERIES	(a) Modify or restrict timber harvesting and other resource extraction programs in shoreline areas of D.T.L.'s, to minimize aesthetic impacts (b) Where possible, restrict the building of new primary, or permanent secondary, access roads where they would provide unacceptable road access to "fly-in" fisheries.

PROBLEM/ISSUE - USER CONFLICTS

OPTIONAL MANAGEMENT STRATEGIES	TACTICS
(4) SECURE PUBLIC ACCESS TO COLDWATER STREAMS SUCH AS MANITOU RIVER, MINDEMOYA RIVER, BLUE JAY CREEK AND MICHAELS BAY	(a) Work with individuals and municipalities to encourage them to allow public access to streams (b) Obtain landowner agreements to access various locations on private land (c) Purchase rights-of-way from landowners or enter into long-term leases (d) Encourage Game and Fish clubs to work with landowners in securing rights-of-way and ensuring maintenance of area (e) Public education program aimed at respecting private property

PROBLEM/ISSUE - LACK OF PUBLIC AWARENESS

OPTIONAL MANAGEMENT STRATEGIES	TACTICS
(1) INCREASE PUBLIC AWARENESS OF DISTRICT FISHERIES PROBLEMS AND MANAGEMENT PROGRAMS	(a) Develop a comprehensive communications and extension program (b) Hold "user group" workshops to disseminate information on fisheries management (c) Issue district news releases on current fisheries programs (d) Develop an extension education program through local schools (e) Encourage public participation in fisheries management through school projects, ("Adopt a Stream"), the Community Fisheries Involvement Program or through privitization of various programs (f) Disperse information on fisheries management through interpretive programs at Provincial Parks and Hatcheries and through exhibits at local fairs

PROBLEM/ISSUE - INADEQUATE SCIENTIFIC KNOWLEDGE

OPTIONAL MANAGEMENT STRATEGIES	TACTICS
(1) ENSURE RESEARCH NEEDS OF DISTRICT ARE MET	(a) Identify areas at district level where more information and research is needed (b) Encourage research projects by MNR fisheries research branch and/or by outside agencies (c) Work with Fisheries Assessment Units to collect data and assess management programs (d) Implement programs at the District level to assess the success of specific management programs
(2) MAKE EFFECTIVE USE OF NEW KNOWLEDGE AND TECHNOLOGY	(a) Access knowledge and information from other districts and outside agencies (b) Make effective use of the Provincial system of Fisheries Assessment Units (c) Become involved in, and/or initiate experimental management projects

FISHERIES MANAGEMENT ZONES

The Espanola District has been divided into 9 geographic zones for the purpose of fisheries management (Figure 4). The division of the district into zones reflects such differences as lake productivity, land ownership, proximity to population concentrations and degree of access. Fisheries management strategies within these zones will be directed at meeting a balance of fisheries supply and demand for various user groups. The "Land Use Intent" of each zone reflects policies outlined in The District Land Use Guidelines.

Zone 1 - Lake Huron, Georgian Bay, west end North Channel

A. Area Description

This area represents the North Channel of Lake Huron, west of Darch, Innes and Clapperton Islands, and the area of Lake Huron around Cockburn Island, and south and east of Manitoulin Island. The area does not include any of the mainland of Manitoulin Island.

The major existing use of the area's fishery resource is through commercial fishing. Sport fishing occurs mainly in the near-shore areas and around the islands of the North Channel, and in the bays along the shoreline of Manitoulin Island. Deep-water fishing for salmon is becoming increasingly popular, and several charter boats operate off the south shore of Manitoulin Island and in the Mississagi Strait. Providence Bay and Michael Bay provide important sports fisheries for salmon, rainbow trout and brook trout.

B. Land Use Intent

The Ministry of Natural Resources will manage this area primarily for fish production, for both the commercial fishery and for anglers. The growing importance of Lake Huron to the tourist industry will be recognized, and crown land disposition for resource development and tourism purposes may be permitted (D.L.U.G.)

C. Fisheries Management Strategy

The Lake Huron Fisheries Management Plan will form the basis for fisheries management strategies in Lake Huron. Because fisheries management in Lake Huron is shared by 9 administrative districts, decisions and policies regarding its management must be made at the Provincial level.

The long-term goal for fisheries management in Lake Huron is to re-establish native species of fish at their former levels of abundance. This strategy is founded on the premise that native species provide the most stable, self-sustaining fish community which is essential for optimal realization of this goal. Lake trout backcross is presently felt by M.N.R. to be the most suitable species for long-term rehabilitation as a top predator species. Other options may include the re-establishment of native lake trout through stocking, or a program to stock a combination of both lake trout and lake trout backcross.

As rehabilitation takes many years to achieve, the importance of salmon to the sports fishery must be recognized in the fisheries management plan for Espanola District. The spawning habitat offered by streams on Manitoulin Island requires protection if continued natural reproduction of salmon is to occur. Spawning salmon may require additional protection from poaching, through such means as fall sanctuaries in specific locations.

Although the Ministry of Natural Resources does not plan to enhance existing salmon populations through M.N.R. stocking programs, consider-

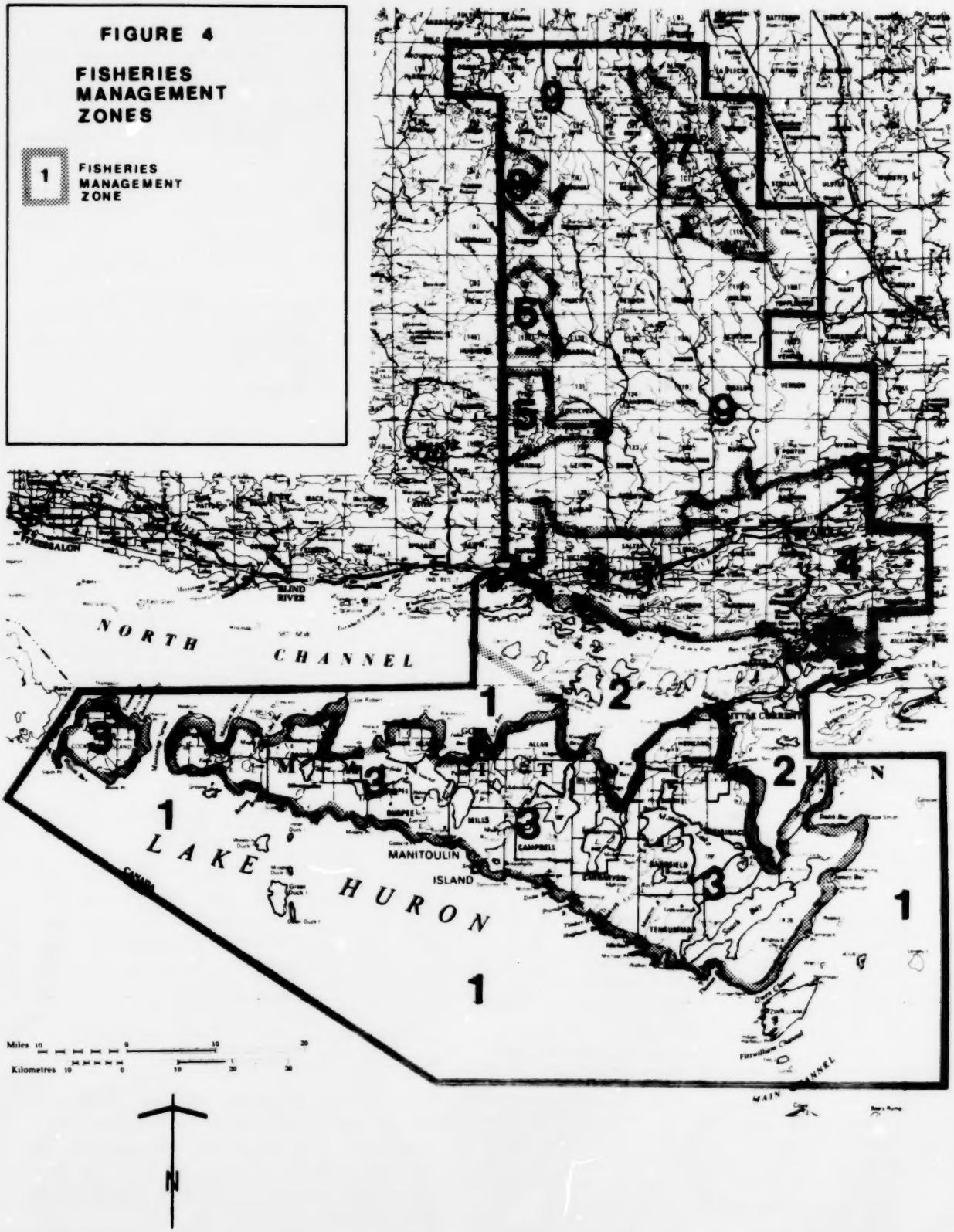
Ministry of Natural Resources
Ontario

ESPANOLA
ADMINISTRATIVE DISTRICT
NORTHEASTERN REGION

FIGURE 4

FISHERIES MANAGEMENT ZONES

1 FISHERIES MANAGEMENT ZONE



ation will be given to allowing projects under the Community Fisheries Involvement Program for stocking salmon in selected areas.

Commercial Fishing will continue to be managed on a quota basis.

Zone 2 - The North Channel

A. Area Description

This management zone covers the majority of the North Channel of Lake Huron - running from Aird and Darch Islands on the west to Heywood Island on the east, and includes the Bay of Islands, McGregor Bay and Manitowaning Bay. The major existing use of this area is recreation, with cottaging in the near mainland areas and boating in the more open water areas. This area is included within the boundaries of the North Georgian Bay Recreation Reserve.

Sport fishing for northern pike, yellow perch and smallmouth bass in the North Channel occurs mainly in the near-shore areas. The Bay of Islands and McGregor Bay support sport fishing for northern pike, muskellunge and smallmouth bass. These areas formerly supported walleye populations as well.

The Heywood Island area has recently begun to provide a sport fishery for lake trout backcross as the result of an experimental stocking program.

Iroquois Bay supports one of the last two remaining populations of native Lake Huron lake trout. Natural recruitment appears to be very limited in this population. Excessive angler harvests in recent years cause additional threat to the survival of this unique population.

Commercial fishing is ongoing in the North Channel, and Manitowaning Bay. McGregor Bay, the Bay of Islands and other specific portions of this area are closed to commercial fishing.

B. Land Use Intent

The intent of M.N.R. is to identify and maintain recreational use as the primary and most important use of this area. The area is of particular importance to the tourist industry. There will normally be no disposition of Crown Land in the North Channel area, although dispositions for commercial tourism purposes may occur in the Bay of Islands and McGregor Bay areas.

C. Fisheries Management Strategy

Fisheries management strategies in this zone will be directed toward providing increased recreation opportunities from the sport fishery. This in turn will provide increased benefits to the tourist industry.

Current management of McGregor Bay is directed at rehabilitating the former walleye fishery by rearing and stocking walleye through the Community Fisheries Involvement Program. If successful, such programs could be expanded to other suitable areas such as the Bay of Islands.

The waters around Heywood Island are the site of an experimental stocking program aimed at establishing a population of lake trout backcross. This program should be assessed to determine the success of the stocking and to determine if natural reproduction is occurring. Management options for this area include continuing the present lake trout backcross program, stocking an alternate species such as lake trout, or maintaining an artificial angling fishery through put-grow-take stocking of a suitable species if natural reproduction is not achieved.

If efforts continue to be directed toward establishing a self-sustaining population it may be necessary to control angler harvests to ensure excessive harvests do not jeopardize rehabilitation efforts.

The North Channel, east of Clapperton Island, may be a possible site for further stocking of lake trout or lake trout backcross.

Efforts should continue toward preserving and rehabilitating the Iroquois Bay lake trout population. Eggs are presently collected from this stock annually and yearling fish restocked. Angler harvests should be monitored and controlled as necessary through season adjustments or sanctuaries. Rehabilitation of the population is the primary objective for Iroquois Bay, with provision of a sports fishery a secondary objective.

Commercial fishing in the North Channel and Manitowaning Bay will continue to be managed on a sustained yield basis.

Zone 3 - Manitoulin Island

A. Area Description

This zone encompasses Manitoulin and Cockburn Islands and includes Bayfield Sound and South Bay. Most land is patented. The major existing land uses are related to agriculture, recreation and tourism. Aggregate extraction and forest management also occur.

Lake Manitou is a Provincially significant lake trout lake, both as a sports fishery and as a source of lake trout spawn for the Provincial fish culture program. Mindemoya and Kagawong Lakes provide the major summer fishery for warmwater species. Wolsey Lake and Bayfield Sound provide an important winter and spring fishery for yellow perch. District creel surveys indicate that as much as 90 to 95% of angling pressure on the larger lakes is associated with commercial tourism. Many of the smaller lakes are also locally important to both resident anglers and commercial guests.

Salmon and trout fishing in Manitoulin Island streams is becoming increasingly important to the tourist industry as well as to local fishermen. Public access to many of these streams is becoming more and more restricted.

B. Land Use Intent

The Ministry of Natural Resources' intent for this zone is to recognize and support the existing activities in the settled, rural areas. The primary management efforts of the Ministry will be directed towards supporting management of privately owned agricultural lands, good quality aggregate resources and high capability recreational areas. Fisheries management will be a Ministry priority in Lake Manitou, the Manitou River and Blue Jay creek.

C. Fisheries Management Strategy

Fisheries management strategies on Manitoulin Island will be directed at providing increased angling opportunities for both the tourist industry and local anglers. Existing fish habitat will be protected through review of all shoreline development plans.

Lake Manitou will be managed to ensure a continued supply of lake trout spawn for the Provincial fish culture program, as well as to provide a viable sports fishery. Strategies should be aimed both at protecting water quality and shoreline habitat, and at monitoring angler harvests of lake trout.

Management strategies for coldwater streams should be directed toward ensuring the maintenance of water quality and suitable spawning habitat for both trout and salmon. Continued public access to stream fisheries on Manitoulin Island should be ensured through optional management strategies outlined in the previous section.

South Bay is currently stocked with paired plants of lake trout and lake trout backcross, both to compare the success of these species and to establish a sport fishery in South Bay. Optional strategies for the management of South Bay might include the stocking of only one of these species to provide an angling fishery.

Kagawong Lake, Wolsey Lake and Bayfield Sound may be considered for the future establishment of walleye fisheries.

Zone 4 - Highways 6 and 17 Corridors

A. Area Description

This zone includes the mainland area lying north of the North Channel, to and including Birch, Agnew and Bellows Lakes. This zone includes the majority of the patented land on the North Shore of the Espanola District and the associated population centres. The zone contains concentrations of both coldwater and warmwater lakes.

The lakes in this zone are heavily used by both local residents of the area and by commercial guests. District creel surveys show that approximately 60% of angling pressure on the larger lakes is associated with the tourist industry. There are several large walleye lakes in this zone but many have seen declining fisheries in recent years. Most lakes are road accessible.

B. Land Use Intent

In this area management efforts will be directed towards maintaining a reasonably balanced multiple-use area. On the land base primary activities will include forestry, mining and aggregate extraction. On the water base primary emphasis will be allocated to commercial tourism and recreation. The need to provide sufficient water resources for energy production at the existing dam sites will also continue to be a Ministry management objective.

C. Fisheries Management Strategy

Fisheries management programs in this zone will be directed at meeting the high demand for angling opportunities from both local anglers and the tourist industry, on a sustained yield basis. The fisheries resource in this zone and the North Channel could provide a basis for increased tourism development along the Highway 17 corridor. Additional cottage development should be directed toward the larger lakes such as Agnew, Wabagishik and Panache.

Through the Community Fisheries Involvement Program, walleye are currently being stocked in the Lang Lake chain as well as several lakes in the Spanish area. If successful, this program could be expanded to other suitable lakes in this zone.

Stocking of area lakes with lake trout, brook trout and splake will be continued to help meet angler demand for these species. Public input is required to determine if the current mix of species is preferred, or if, for example, rainbow trout or splake should be stocked in some inland lakes rather than brook or lake trout. Other options include directing more stocking to lakes close to population centres as opposed to stocking "remote" northern lakes.

The Spanish River below Espanola has the potential to provide a quality river fishery as water quality continues to improve.

Zone 5 - Whiskey Lake - Serpent River

A. Area Description

This zone includes parts of Lehman, Lockeyer, Gaiashk and Gerow Townships and is centered around a concentration of lakes in the Serpent River system and surrounding area. Lakes in this zone receive heavy fishing

pressure from local anglers both summer and winter. The area is easily accessed by snowmobile from Elliot Lake. Road access to lakes is limited. Commercial tourism in this zone is centered mainly on East Bull Lake. Whiskey and Wiggley Lakes are also locally important to the tourist industry.

Water quality problems have constrained the fisheries of Whiskey Lake and the Serpent River system although current re-habilitation efforts are showing some success.

B. Land Use Intent

Ministry of Natural Resources' programs in this area will be primarily aimed at supporting such commercial and industrial activities as tourism, mining and forestry. Crown land disposition will be considered for such things as resource development, commercial tourism and recreation purposes, on a site-specific basis.

C. Fisheries Management Strategy

Fisheries management activities in this zone will be directed toward protecting existing fish habitat from resource extraction, continuing fish stocking programs and managing the fisheries on a sustained yield basis. Although access to the general area may be increased for resource extraction purposes, it is not felt that the areas fisheries could support increased road access to individual lakes.

The rehabilitation of Whiskey Lake will continue as water quality improves in the Serpent River System with the objective of restoring the original fish community. The re-establishment of lake trout will be the first priority. Consideration may be given to re-establishing a walleye fishery at a later date.

Zone 6 - Spinweb Lake Area

A. Area Description

This area includes parts of Poncet and Plourde Townships, locally known as Plaunt's Cut and is accessed by the Massey Tote Road (Hwy 553). The area is the site of a concentration of small trout lakes, including 8 lake trout lakes. As well, this area provides part of the head waters for the West Sables River. The area is within the boundaries of the Lower Spanish Forest Management Agreement Area with E.B. Eddy Forest Products Ltd.

The Spinweb Lake area provides a higher concentration of recreational use than does the surrounding area. A network of roads throughout this zone provides easily-accessible road-based recreation. The area sees steady fishing pressure both summer and winter and maintains a high-quality sport fishery. The majority of fishing in the area is from local anglers. The area's lakes are easily accessed by snowmobile from the town of Elliot Lake.

B. Land Use Intent

The Ministry of Natural Resources' intent for this zone is to provide a quality, road accessible recreational landscape, as well as to maintain a quality wood production area. Most other natural resource uses will also be permitted; in particular, efforts will be made to maintain fish and wildlife population levels.

C. Fisheries Management Strategy

Fisheries management strategies in this zone will be directed toward maintaining a high-quality road-accessible fishery. Aerial creel surveys indicate that most lakes in this zone are currently being fished close to capacity. Therefore, no efforts will be made to direct more fishing pressure to this area. It is not felt that, from a fisheries

standpoint, there are any lakes in this zone which would be suitable for private hunt and fish camps or remote cottage development.

The three designated tourism lakes will continue to be managed as "remote" access fisheries within this zone according to policies outlined in the District Land Use Guidelines. All other lakes are currently road accessible.

Zone 7 - Mozhabong Lake Area

A. Area Description

This area includes parts of Del Villano, Hotte and Ouellette Townships and encompasses the area of Mozhabong, Sinaminda and Shakwa Lakes. Access to this zone is via the West Branch, a forest access road running north of Webbwood. The area includes a concentration of trout lakes, as well as several small pike lakes. The Agnes River supports both cold and warmwater species. This zone is within the boundaries of the Lower Spanish Forest Management Agreement Area.

The Mozhabong Lake area provides a higher concentration of recreational use than does the surrounding area. A network of roads throughout this zone provides easily-accessible road-based recreation. The area sees steady fishing pressure both summer and winter. It is a quality day-use area, with the majority of fishing pressure originating from resident anglers.

B. Land Use Intent

The Ministry of Natural Resources' intent for this zone is to provide a quality, road accessible recreational landscape, as well as to maintain a quality wood production area. Most other resource uses will also be permitted; in particular, efforts will be made to maintain fish and wildlife population levels.

C. Fisheries Management Strategy

Fisheries management strategies in this zone will be directed toward maintaining a high-quality road-accessible fishery. It is felt that most lakes in this zone are currently receiving maximum fishing pressure. Therefore no efforts will be made to direct increased fishing effort to this area. From a fisheries standpoint, it is not felt that increased development of either private or commercial outpost camps or remote cottages would be desirable.

Zone 8 - Sables - Bark Lakes

A. Area Description

Area 8 is centered on Fontaine and the north half of Lefebvre Townships. The boundaries of the zone follow the Lac Aux Sables - Bark Lake canoe route, including a 120 m area on the outside edge of the route.

This is a compact area containing two large trout lakes and several small ones, most connected by waterways or portage trails. The lakes in this zone are not road accessible. The area receives moderate fishing pressure in spring and summer. Winter fishing pressure is heavy when the Massey Tote Road is plowed to Ritchie Falls.

The majority of angling pressure comes from local day-trippers. Little Trout, Five Star, Little Touch, Sportsman and Frying Pan lakes are used by guests of the commercial tourist outfitters, particularly for spring fishing. There are 6 designated tourism lakes.

B. Land Use Intent

It is the intention of the Ministry of Natural Resources to manage this area for low density, limited road access, recreational uses. Most other natural resource uses will be

permitted provided this primary intent is not impaired. Road access to this area will be closely regulated and public use of any road system may be restricted or prohibited.

C. Fisheries Management Strategy

Fisheries management activities in this zone will be directed toward protecting existing fish habitat from resource extraction, continuing present stocking programs and managing the lake trout lakes on a sustained yield basis.

Big Trout lake should be assessed for natural lake trout reproduction. It has been classified as being acidic, based on its capacity to buffer acid precipitation. The feasibility of rehabilitating the lake trout fishery could be considered.

Brown Lake was formerly important to the tourist industry as a put-grow-take brook trout fishery but has been invaded by yellow perch. The possibility of "reclaiming" Brown Lake prior to stocking brook trout may be considered. Alternatively, consideration may be given to stocking splake on a put-grow-take basis.

Zone 9 - The West Branch

A. Area Description

This large area includes the majority of the Crown land base of the Espanola District. Three major rivers, the Spanish, the Wakonassin and the Aux Sables drain the area. Both coldwater and warmwater lakes are scattered throughout the area. Access to this zone is by either the Massey Tote Road (Highway No. 553) or the West Branch road.

This area contains a large portion of the Lower Spanish Forest Management Agreement Area and has traditionally been a major source of wood fibre. Commercial tourism and extensive Crown land recreation are also common uses. Designated tourism lakes, used for fly-in fishing, are scattered throughout the zone.

B. Land Use Intent

The primary purpose for this area is economic resource development, in particular logging and commercial tourism. Most natural resource uses are permitted and the maintenance of the existing environmental quality and acceptable levels of fish and wildlife populations will be a management goal.

C. Fisheries Management Strategy

Fisheries management activities in this zone will be directed toward protecting existing fish habitat, continuing present stocking programs and providing a variety of angling opportunities. Designated tourism lakes and lake trout lakes will be managed in accordance with the District Land Use Guidelines. Location of new access roads should be reviewed to maintain the remoteness of fly-in tourist operations. Walleye fishing opportunities are limited in this zone, but the feasibility of establishing walleye in some of the larger northern lakes may be investigated. Candidate lakes for new brook trout or splake fisheries may also be identified.

PUBLIC REVIEW

The Ministry of Natural Resources is committed to public consultation. Through it, the Ministry receives innovative ideas which can lead to more effective and efficient resource management. Moreover, public consultation can lead to decisions which resolve contentious problems and issues before rigid positions are reached. We would appreciate receiving your written comments on the fisheries management options presented in this document.

Please take a few moments to complete the enclosed questionnaire. Your comments will be considered in the preparation of a draft Fisheries Management Plan.

A second "Open House" will be held upon completion of a draft Fisheries Management Plan, when the the public will again be invited to participate in the planning process. Public response will be summarized in an appendix to the management plan.

ESPANOLA DISTRICT FISHERIES MANAGEMENT PLAN
BACKGROUND INFORMATION AND MANAGEMENT OPTIONS

QUESTIONNAIRE AND COMMENT SHEET

Please return questionnaire to the Espanola District office no later than February 28, 1986.

All comments will be kept as public records and will be considered in the preparation of the draft Fisheries Management Plan.

NAME: _____

ADDRESS: _____

GROUP OR ORGANIZATION REPRESENTED: _____

Do you feel we have identified all of the potential management strategies to deal with each of the following problems?

	Problem/Issue	Comments
(1)	Meeting User Demands	_____
(2)	Over-fishing	_____
(3)	Loss of Fish Species or Genetic Stocks	_____
(4)	Inadequate Sources of Hatchery Reared Fish	_____
(5)	Introduction of Non-Native Species	_____
(6)	Habitat Loss and/or Degradation	_____
(7)	User Conflicts	_____
(8)	Lack of Public Awareness	_____
(9)	Inadequate Scientific Knowledge	_____

Other Problems?

_____

_____

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Please feel free to make any other comments or suggestions on this phase of the preparation of a Fisheries Management Plan for the Espanola District (use back of sheet if necessary).

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